



NOTES

SPINAL CORD INJURY

GENERALLY, WHAT IS IT?

PATHOLOGY & CAUSES

- Damage/inflammation of spinal cord → loss of function, sensation

RISK FACTORS

- Traumatic spine injury, tumours, inflammatory disease

SIGNS & SYMPTOMS

- Brown-Sequard syndrome (BSS)
 - Contralateral loss of pain, temperature; ipsilateral hemiparesis
- Cauda equina syndrome (CES)
 - Severe back pain, sciatica, saddle anesthesia, incontinence, sexual dysfunction

DIAGNOSIS

DIAGNOSTIC IMAGING

MRI

- Secondary compression of spinal cord

TREATMENT

SURGERY

- Decompression surgery

OTHER INTERVENTIONS

- Stabilize vitals, immobilize acute injuries

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BROWN-SÉQUARD SYNDROME (BSS)

osms.it/brown-sequard-syndrome

PATHOLOGY & CAUSES

- AKA spinal hemiparaplegia
- Spinal cord hemisection (damage limited to one half) → paralysis on side of lesion; loss of sensation on opposite side
- Neurological fallout from damage to spinal tracts
 - **Corticospinal tract:** loss of upper motor neuron innervation → ipsilateral spastic paralysis, below level of lesion; damage to lower motor neuron at level of spinal injury → ipsilateral flaccid paralysis of muscles supplied at spinal level
 - **Dorsal column (medial lemniscus):** ipsilateral loss of vibration, proprioception, fine touch
 - **Spinothalamic tract:** contralateral loss of pain, temperature sensation; 1–2 levels below lesion

CAUSES

- Spinal fractures, gunshot wounds, stab wounds, crush injury, tumours, inflammatory diseases

COMPLICATIONS

- Progression to complete paralysis

SIGNS & SYMPTOMS

- Contralateral pain, temperature loss; ipsilateral hemiparesis, proprioception/vibration sense loss

DIAGNOSIS

DIAGNOSTIC IMAGING

MRI

- Unilateral spinal cord pathology/ hemisection of spinal cord

TREATMENT

OTHER INTERVENTIONS

- Traumatic injuries
 - Cervical spine/lower dorsal vertebra immobilization

CAUDA EQUINA SYNDROME (CES)

osms.it/cauda-equina-syndrome

PATHOLOGY & CAUSES

- Simultaneous compression of multiple lumbosacral nerve roots below level (L2) of conus medullaris (distal bulbous part of spinal cord) → neuromuscular, urogenital symptoms

CAUSES

- Lower back disc herniation, spinal stenosis, cancer, trauma, epidural abscess/hematoma

COMPLICATIONS

- Paraplegia, persistent bowel/bladder problems, sexual dysfunction, loss of sensation

SIGNS & SYMPTOMS

- Red flags (urgent investigation/treatment required)
 - Severe back pain; saddle anesthesia; incontinence/sexual dysfunction
- Muscle weakness in lower leg with absent/reduced deep tendon achilles/patellar reflex
- Gait disturbance
- Sciatica-like pain in one/both legs: low back pain, radiates down leg
- Numbness in saddle distribution
 - Anesthesia/paresthesia of S3–S5 dermatomes → anesthesia/paresthesia perineum, external genitalia, anus, perianal region
- Loss of bowel/bladder control
- Absent anal reflex, bulbocavernosus reflex
- Decreased tone of urinary, anal sphincters
- Detrusor weakness → urinary retention/post-voiding residual incontinence
- Sexual dysfunction

DIAGNOSIS

DIAGNOSTIC IMAGING

Spine MRI (with gadolinium contrast)

- Compression of S2–S4 nerve roots by mass/herniation

Bladder ultrasound

- Post-void residual > 250ml

OTHER DIAGNOSTICS

Clinical examination

- Regional anesthesia, muscle weakness, abnormal reflexes, abnormal gait

TREATMENT

SURGERY

- Surgical decompression (e.g. laminectomy)

OTHER INTERVENTIONS

Sudden onset CES

- Medical emergency
 - Early treatment (< 48hrs) of compressive lesions → significantly better outcomes, prevents progression to paraplegia

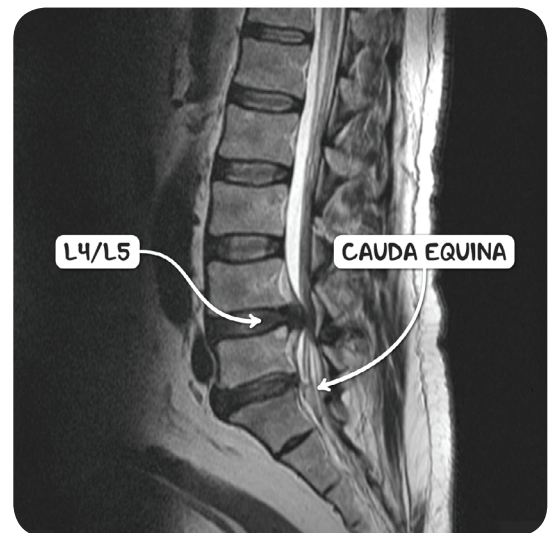


Figure 88.1 An MRI scan of the spine in the sagittal plane demonstrating a L4/L5 intervertebral disc prolapse compressing the cauda equina. The individual presented with symptoms of cauda equina syndrome.